U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF PLANT INDUSTRY.

B. T. GALLOWAY, Chuf of Bureau.

CIRCULARS OF THE BUREAU OF PLANT INDUSTRY NOS. 1 TO 40, **
INCLUSIVE, 1908-1909.



VOLUME L



WASHINGTON:
GOVERNMENT PRINTING OFFICE,
1909.

Digitized by the Internet Archive in 2013

CONTENTS.

	Page.
CIRCULAR No. 1. Self-Boiled Lime-Sulphur Mixture as a Promising	
Fungicipe.	
Introduction	.5
Sulphur as a fungicide	tj
The self-boiled lime-sulphur mixture	7
Preparation of the mixture	ì
Apple bitter-rot experiments	8
Experiments in the treatment of other apple diseases	1.1
Apple blotch	1.1
Apple leaf-spot	12
Apple scab	12
Experiments in the treatment of peach diseases	12
Peach brown-rot and scab	12
Peach-leaf diseases	16
A combined fungicide and insecticide	16
Range of possible usefulness	17
CIRCULAR No. 2.—AN IMPROVED METHOD OF SEPARATING BUCKHORN FROM	
RED CLOVER AND ALFALFA SEEDS.	
Introduction	ō
The mucilaginous property of buckhorn seeds	6
Coating buckhorn seeds after moistening them	6
The dry sawdust method of separation	7
Sieves or screens	5
Alfalia or red clover seeds in two grades.	9
The kind of sawdust to use.	10
Dry sand or road-dust method.	10
Wet sawdust method	11
An alternative method	11
	11
Wet sand method	
Agglutinative method	11
Method of separation not injurious to clover and alfalfa seeds	12
CIRCULAR No. 3 Some Stem Tumors or Knots on Apple and Quince Trees.	
Occurrence of tumors.	.)
	6
Description	9
Experiments	
Structure of tumors.	10
Relation of the tumors to other forms of disease	11
Effect of the disease upon trees.	12
Suggestions to nurserymen, nursery inspectors, and orchardists	15
Reports desired on the distribution and severity of stem tumors or knots.	16

Chrony of No. 1. The Tonggroup of Dispuys One of Compress Company	Page.
CIRCULAR NO. 4.—THE TREATMENT OF DAMPING-OFF IN CONFEROUS SEEDLINGS.	-
Introduction	5
Procedure in experiments	6
Powders used	6
Sulphur	6
Dry Bordeaux mixture	6
Copper sulphate and lime.	6
Solutions used	7
Potassium sulphid and permanganate	7
Formalin	7
Sulphuric acid	7
Chromada No. 5 Printing Cutaryon by many Vocamany Chromada	
CIRCULAR NO. 5.—BARLEY CULTURE IN THE NORTHERN GREAT PLAINS.	-
Development of the industry.	5
Distinct barley districts	5
Comparison of yields of different varieties in the northern Great Plains	
area	6
Two-rowed compared with six-rowed barley	9
Breeding better strains	10
Maintaining pure seed	10
Cultivation	11
Uses of barley	12
CIRCULAR NO. 6.—THE CULTIVATION AND HANDLING OF GOLDENSEAL.	
	5
Introduction	6
Habitat and range of goldenseal	
Description of the plant.	6
Description of the rhizome, or rootstock	9
Collection and preparation of the root	10
Brief medical history	10
Cultivation	11
Necessary soil conditions	11
Fertilizers	12
Artificial shade	12
Use of trees as shade	13
Attention required	13
Methods of propagation	13
Experiments with seeds	13
Experiments with divided rhizomes	15
Experiments with plants from fibrous roots	16
Yield of roots	16
Time necessary to mature the crop	17
Hydrastin content of cultivated roots	17
Market conditions.	18
Highest and lowest prices	18
rightest and lowers process	
Circular No. 7.—The Field Treatment of Tobacco Root-Rot.	
Nature of root-rot	5
Field treatment of root-rot	5
Occurrence of root-rot	6
Field experiments showing the bad effects of alkaline commercial fertiliz-	
ers on root-rot soils.	6
Greenhouse experiments with alkaline fertilizers	7
Summery	8

CONTENTS.

	Page.
CIRCULAR NO. 8. THE SMUTS OF SORGHUM.	5
Introduction	5
Kinds of sorghum smnts	6
Grain, or kernel, smut	
Treatment of grain smut	6
Formalin treatment	6
Hot-water treatment	1
Copper sulphate treatment	8
Head smut	8
Recommendations	`
CIRCULAR NO. 9 TEXAS ROOT-ROT OF COTTON: FIELD EXPERIMENTS IN 1907.	
Introduction	3
Cause of root-rot	3
Reproduction and distribution of the fungus	3
Methods of control	1
Rotation of crops.	4
Aeration of the soil by deep fall plowing.	.5
	6
Summary	
Conclusions.	- 1
Circular No. 10. Notes on Dry Farming.	
Dry-land agriculture in Montana	1
Plowing with gas sline traction engines	2
Dry-land agriculture in Utah	3
Dry-land agriculture in Colorado	1
Circular No. 11.—Danger in Judging Cotton Varieties by Lint Percent-	
AGES.	
Introduction	•)
Smaller or lighter seeds raise lint percentage	5
Advantage of large seeds and large-seeded varieties	6
Advantages of heavy seeds	S
Higher lint percentages with diminished fertility	8
Large yields without high percentages	9
High quality with low percentages	11
True standard of yield in cotton	12
A lint index for judging varieties.	12
Conclusions.	1.5
Concursions	1.,
Circular No. 12.—Dry-Land Grains.	
Introduction	•)
Diversity of crops necessary	
Barley	1
Oats	-4
Spelt and emmer	5
The grain sorghums	- 6
Rye	6
Minor crops	7
Wheat the principal crop.	-
The arid region	-
The great wheat groups.	8
	4
The hard spring-wheat group	3
The durum wheats Growing popularity of durum wheats	
trowing Dodniarity of thrum wheats	

Circular No. 12.—Dry-Land Grains—Continued.	Page.
The great wheat groups—Continued.	
The great wheat groups—Continued. The hard winter or Crimean wheats	10
Intermountain wheats	10 11
Greater uniformity necessary	12
The Pacific wheats	12
Future improvement.	13
Conclusions.	
Concresions	14
Circular No. 13.—The Work of the San Antonio Experiment Farm in 1907.	
Introduction	3
Lines of work undertaken	4
Tillage experiments.	4
Deep plowing and subsoiling	4
Early fall plowing	5
Manuring	5
The dust mulch	6
Winter tillage	7
Rotation of crops	7
Methods of preventing sterility in sorghum.	9
Eradication of Johnson grass	9
Crops for forage and green manure	11
Crops raised for grain.	13
Cultural experiments with cotton	13
Acclimatization of weevil-resisting types of cotton	14
Horticultural work	14
Conclusions	15
CIRCULAR No. 14.—CHANGE OF VEGETATION ON THE SOUTH TEXAS PRAIRIES.	
CIRCULAR No. 15.—THE FERTILIZING VALUE OF HAIRY VETCH FOR CONNECT-	
ICUT TOBACCO FIELDS.	
Introduction	1
Adaptability of hairy vetch to tobacco fields	1
Importance of inoculating hairy vetch	2
Pot experiments with hairy vetch	2
Nitrogen furnished by hairy vetch turned under	3
Pot experiments with tobacco	4
Conclusions	5
CIRCULAR No. 16A NEW BASIS FOR BARLEY VALUATION AND IMPROVE-	
MENT.	
CIRCULAR NO. 17.—INDEX TO PAPERS RELATING TO PLANT-INDUSTRY SUB-	
JECTS IN THE YEARBOOKS OF THE UNITED STATES DEPARTMENT OF AGRICUL-	
TURE.	
Explanatory statement	3
Index	5
CIRCULAR No. 18 REAPPEARANCE OF A PRIMITIVE CHARACTER IN COTTON	
Hybrids.	-
Introduction	3
Primitive characters shown in reversion and recapitulation	3

CIRCULAR No. 18 REAPPEARANCE OF A PRIMITIVE CHARACTER IN COTTON	Page.
Hypros—Continued.	_
Reappearance of green fuzz in cotton hybrids.	5
Differences between first and second generations.	6
Expression of claracters in first and second generations	9
Expression of characters determined by adjustments	
Significance of primitive characters in breeding	10
Summary	11
CIRCULAR No. 19.—The Decay of Florida Oranges while in Transit and on the Market. Introduction	1
Extent of loss from decay in Florida oranges	1
Canse of decay in oranges.	•)
Injuries and long stems	2
	3
Packing-house experiments Shipping experiments and market tests	ە 5
Conclusion	.) S
Concusion	
Circular No. 20.—An Electrical Resistance Method for the Rapid Deter-	
MINATION OF THE MOISTURE CONTENT OF GRAIN.	
Introduction	3
Description of the electrical resistance method for measuring the moisture content of grain.	3
Relation of electrical resistance to temperature	4
The determination of the moisture content of wheat at different temperatures	• 5
Apparatus for measuring electrical resistance of grain	G
Summary	5
·	
CIRCULAR No. 21.—FARMERS' COOPERATIVE DEMONSTRATION WORK IN ITS RELA-	
TION TO RURAL IMPROVEMENT,	
Introduction	3
The necessity for improved rural conditions in the South	3
Some reforms needed in rural life.	7
The remedy offered by the Farmers' Cooperative Demonstration Work	8
Organization of this special work	9
Instruction of the farmer	9
Field schools.	10
Instruction confined to a few essential subjects	11
Special features of the work	11
Effect of the work on the farmer	12
Rural improvement the natural result of this work	13
Improved rural conditions already established	14
Bettered conditions among the colored people	18
CIRCULAR NO. 22.—FARM METHODS OF APPLYING LAND PLASTER IN WESTERN	
Oregon and Western Washington.	
Introduction	:}
Koon's land-plaster distributer	-5
Olson's land-plaster distributer	9
End-gate seeders	13
Summary	14

Introduction	
Potato wilt	
The cause of "potato-sick" lands	
Description of the wilt	
The dry-rot of the tubers	
Relationship of potato wilt to similar diseases in other crops	
Soil fertility not a factor affecting wilt	
Manner of infection and spread	
Remedial measures for wilt	
Rotation of crops	
Wilt-resistant varieties of potatoes	
Sanitary measures	
A healthy seed supply	
Potato scab	
Losses from scab	
Cause of scab	
Preventive measures for scab.	
Seed treatment for scab.	
Cost of seed treatment	
Decay of potatoes	
Cause of the "leak"	
Remedial measures for the "leak"	
Rotation problems	
Forage crops.	
Small grains for hay	
Rye-grass.	
Vetches	
Alfalfa	
Other forage crops.	
Other totage crops	
RCULAR No. 24.—Alfalfa in Cultivated Rows for Seed Product	ION IN
Semiarid Regions.	
Introduction	
Princ ples underlying alfalfa seed production.	
The relation of insects to the setting of alfalia seed.	
Areas to which the growing of alfalfa for seed in cultivated rows is ad-	
Selection of soil	
Location of fields.	
Preparation of the seed bed	
The prevention of the drifting of soil	
Choice of seed for cultivation in rows	
Method of seeding in rows	
Rate of seeding and thickness of stand	
Rate of seeding and thickness of stand	
Seeding in check rows to permit cross-cultivation. Time of seeding	
Treatment of the stand the first season.	
Treatment of the stand after the first season	
The right crop to leave for seed.	
Harvesting the seed crop.	
Possibilities of seed production in cultivated rows.	
Developing valuable strains for seed production	
Conducion	

Circular No. 25.—The Cost of Clearing Logged-Off Land for Farming	P
IN THE PACIFIC NORTHWEST.	
Introduction	
The extent of logged-off land.	
Hand method of clearing logged-off land	
Donkey-engine method of clearing logged-off land	
Methods of burning stumps	
Use of chemicals in burning stumps.	
A stump-burning machine	
Use of powder in clearing logged-off land	
Cost of various methods of clearing land	
CIRCULAR NO. 26.—Some Factors Affecting the Keeping Qualities of Amer-	
ican Lemons.	
Scope of the investigation of the keeping qualities of lemons	
Losses of lemons from parasitic diseases	
Losses of lemons from blue mold	
Physiological weakness of lemons	
Methods of preparing lemons for market	
Physical characteristics of the different types of lemons	
Chemical characteristics of lemons	
Aeids	
Sugars	
Water content	
Keeping qualities of lemons	
Relation to structure	
Texture	
Method of curing	
The most serious causes of decay of lemons	
Conclusion	
CIRCULAR No. 27.—Lime-Sulphur Mixtures for the Summer Spraying of	
Orchards.	
Introduction	
Lime-sulphur sprays	
Home-boiled lime-sulphur wash.	
Factory-boiled or commercial lime-sulphur solution	
Self-boiled lime-sulphur mixture	
Peach foliage injury test	
Peach scab and brown-rot experiments	
Experiment in Georgia	
Experiment in Illinois.	
Experiment in Arkansas	
Fruit staining	
Recommendations for the treatment of scab and brown-rot	
Cherry leaf-spot experiments	
Results of the treatment	
Apple-scab experiments	
CIRCULAR No. 28.—CLOVER-SEED PRODUCTION IN THE WILLIAMETTE VALLEY,	
Oregon,	
Introduction	
Types of soils in the Willamette Valley	

Circular No. 28.—Clover-Seed Production in the Willamette Valley,	Page.
Oregon—Continued.	
Means of securing a stand of red clover	5
Crop rotations practiced by growers of clover	. 7
Pasturing and clipping clover	8
The use of land plaster in growing clover	9
Harvesting clover for seed	10
Treating clover seed affected with honey dew	12
Insect pests of red clover	12
How clover-seed production and live stock improve the soil	12
Summary	14
Circular No. 29.—Experiments with Egyptian Cotton in 1908.	
Introduction	3
Imports and prices of Egyptian cotton in 1908.	5
Spinning tests of 1907 fiber.	6
Results of experiments in 1908	7
Experimental fields at Yuma and Sacaton, Ariz	7
Comparison of imported and acclimatized seed	8
Different behavior of the different plantings.	9
Yields.	9
Quality of the fiber	11
Plant-breeding work	12
Planting distance	14
Irrigation methods	14
Productiveness in relation to time of planting and rate of irrigation	14
Crossing with other varieties.	15
Diseases and insect enemies	16
Alkali resistance	18
Present outlook for Egyptian cotton in the Southwestern States	18
Summary	20
CIRCULAR No. 30.—IMPROVEMENT OF THE OAT CROP.	
Need for improvement.	3
Lines along which improvement can be effected	4
Methods of improvement	4
Mechanical selection.	4
Introduction of new seed.	4
Use of the seed plat	5
Individual plant selection	- 6
Hybridization	10
Varieties	10
Conclusions	10
CIRCULAR NO. 31.—Notes on the Number and Distribution of Native Legumes	
in Nebraska and Kansas.	
Introduction	3
Nitrogen fixation in soil by wild legumes	3
Difficulty of making investigation.	3
Legumes form a large part of our native flora	6
Nodules abundant in wild legumes.	6
Factors influencing the distribution of wild legumes.	7
Legumes are crowded out on the richest soils	7
Number of genera and species in different localities	7
Value of legumes in pastures	8
Lesson of the prairie legume for the farmer.	8

CIRCULAR NO. 32.—MOISTURE CONTENT AND SHRINK AGE IN GRAIN.
Wild legumes in the eastern United States
Introduction Loss of material in handling
Reduction of moisture and shrinkage
Why the reduction of moisture and the shrinkage in grain are not the
same
How the difference between the reduction of moisture and the shrink-
age in grain can be determined
Explanation of tables
Circular No. 33.—The Necessity for New Standards of Hop Valuation.
Introduction
Present methods of valuation.
Deficiencies of existing methods
Necessity for new standards
Movement for an international standard
CIRCULAR NO. 34.—THE WORK OF THE SAN ANTONIO EXPERIMENT FARM IN
1908.
Introduction
The climate of San Antonio, Tex.
Soil conditions of the region
The San Antonio Experiment Farm
Equipment
Lines of work undertaken
Experiments with cereals
Experiments with corn
Experiments with forage crops
Mexican seedling peaches
Tillage experiments
The eradication of Johnson grass
Summary
Character V. 2° The Decree V. 10 Decree Decr
CIRCULAR No. 35.—The Present Status of the White-Pine Blights.
Introduction
History of the different forms of blight Complex nature of the diseased condition
Leaf-blight
Description of leaf-blight
Distribution of leaf-blight
Possible causes of leaf-blight
Results of investigations of leaf-blight
Twig-blight
Twig-blight caused by winterkilling
Twig-blight caused by insects.
Twig-blight caused by Lophoderminm brachysporum
Sensitive nature of the white pine
Death of white-pine trees from other causes than blight.
Competition
Insects .
Root-rot .
Lightning
Caution
Conclusions

CIRCULAR No. 36.—The Bud-Rot of the Coconut Palm.	Page.
Prevalence of bud-rot in tropical America.	3
Comparison of bud-rot with various coconut diseases	3
Desirability of a comparison of diseased material from the eastern and	
western tropics. Necessity for further knowledge of the disease.	4
Circular No. 37.—Comparative Tests of Sugar-Beet Varieties.	
Introduction	3
Importance of comparative tests of sugar-beet varieties.	3
Methods of conducting the tests.	4
Methods of securing the seed used	ã
Varieties of seed used and growers producing them. Results of the tests.	5 6
CIRCULAR NO. 38.—EUROPEAN CURRANT RUST ON THE WHITE PINE IN AMERICA.	
Introduction	1
Life history of the fungus.	2
Field characters of the disease	3
Damage caused by the rust	3
Methods of combating the rust	*2 *3
Caution	4
CIRCULAR No. 39.—The Decay of Cabbage in Storage: Its Cause and Prevention.	
Introduction	3
Factors contributing to decay.	4
Field infections	4
House infection	4
Careless handling	5
Organisms concerned in decay	F
Black-rot	ō
Soft-rot.	6
Leaf-blight	(
Storage conditions necessary for preventing decay	(
Construction of storage houses to prevent decay	7
Methods of storing cabbage	٤
Conclusions	8
CIRCULAR No. 40.—A SIMPLE METHOD OF DETECTING SULPHURED BARLEY AND OATS.	
Introduction	
Method of bleaching used.	5
The chemicals necessary for detecting sulphured grain	4
Method of testing grain	5
Necessity for cleanliness	6
Tests of natural barley in comparison with sulphured barley	7

ILLUSTRATIONS.

TEXT FIGURES.	T)
CIRCULAR NO. 1.—SELF-BOILED LIME-SULPHUR MIXTURE AS A PROMISING FUNGICIDE.	Page.
Fig. 1. Crop of apples from a Ben Davis tree sprayed three times with self-boiled lime-sulphur mixture	10
2. Crop from an untreated Ben Davis tree in the same orchard as that shown in figure 1.	11
CIRCULAR No. 2.—AN IMPROVED METHOD OF SEPARATING BUCKHORN FROM RED CLOVER AND ALFALFA SEEDS.	
Fig. 1. Typical plant of buckhorn (Plantago lanceolata L.)	5
2. Seeds of alfalfa (a); seeds of buckhorn (b).	6
3. Alfalfa seeds (a) ; normal buckhorn seeds (b) ; immature or ab-	7
normal buckhorn seeds (c) 1. Buckhorn seeds coated with a grade of sawdust too coarse to pass through a No. 22 mesh (a); similar seeds coated with sawdust passed through a No. 22 mesh and from which very fine particles have been screened out (b); similar seeds coated with very	
fine sawdnst (c); similar seeds coated with white sand (d) 5. Perforated sheet zinc for sieve to separate average grade of red	8
clover and alfalfa seeds. Holes one-fifteenth inch	S
farmer who may raise but a few acres of clover or affalfa	9
7. The same screen shown in figure 6 with the frame withdrawn to show construction	9
8. Mixed sawdust passed through a No. 22 mesh (a); sawdust of same grade as a but with fine particles (c) sifted out through a No. 36 mesh (b) (the grade which should be used); fine sawdust sifted	
from b ; too fine sawdnst (c)	10
 Fescue chaff (a); buckhorn seeds coated with chaff (b). Small seed balls, each being a buckhorn seed to which alfalfa seeds 	11
cling	12
Circular No. 3.—Some Stem Tumors on Knots on Apple and Quince Trees. Fig. 1. Stem tumors on an old apple tree at Mesilla Park, N. Mex	6 7 8 9
6. Roots produced from tumors on a cutting taken from a Meech	10

CIRCULAR NO. 3.—Some Stem Tumors or Knots on Apple and Quince Trees—Continued.	Page.
Fig. 7. Longitudinal section of a tumor on an apple limb after throwing out roots when placed in soil	11
8. Longitudinal section of woolly-knot on a root-grafted apple tree	
grown from apparently healthy scion and root	11
grown in an experiment	12
experiment 11. The origin of hairy-root from buds on an apple seedling.	13 13
CIRCULAR No. 6.—The Cultivation and Handling of Goldenseal.	10
Fig. 1. A flowering plant of goldenseal	7
A fruiting plant and a fruiting branch of goldenseal. Rhizome, or rootstock, of goldenseal.	8 9
4. Rhizome, after division.	14
5. Plant formed from bud on fibrous root of goldenseal	15
6. Seedlings of goldenseal	16
7. Goldenseal, showing bud on fibrous root	17
CIRCULAR No. 9.—Texas Root-Rot of Cotton: Field Experiments in 1907. Fig. 1. Experimental plats of cotton at Petty, Tex., showing the results	
of deep fall plowing	6
CIRCULAR No. 16.—A New Basis for Barley Valuation and Improvement.	
Fig. 1. High-grade Swedish pedigree barley	6
2. Low-grade barley sold on the Milwaukee market	7
3. Malted barley from Pilsen, Austria	8
CIRCULAR No. 19.—The Decay of Florida Oranges while in Transit and on the Market.	
Fig. 1. An interior view of a packing house in Florida, showing the large hopper used for delivering oranges to the sizing machine	6
2. Interior view of a packing house in California, showing the machinery used in preparing oranges for shipment	7
CIRCULAR No. 20.—An Electrical Resistance Method for the Rapid De-	
TERMINATION OF THE MOISTURE CONTENT OF GRAIN. Fig. 1. Chart showing the relation between the moisture content and the	
clectrical resistance of wheat	4
resistance of wheat	ā
electrical resistance and temperature are known	7
CIRCULAR No. 22.—FARM METHODS OF APPLYING LAND PLASTER IN WESTERN OREGON AND WESTERN WASHINGTON.	
Fig. 1. Field showing the effect of land plaster on clover	5
2. An implement for distributing land plaster devised by Mr. Clarence Koon, Lane County, Oreg.	6
3. Cross section of the box of the land-plaster distributer shown in	6
figure 2	U
plete as it rests upon the board that supports it	8
5. The lever of the land-plaster distributer shown in figure 2	8

 CIRCULAR No. 22.—FARM METHODS OF APPLYING LAND PLASTER IN WESTERN OREGON AND WESTERN WASHINGTON—Continued. Fig. 6. An implement for distributing land plaster devised by Mr. Charles Olson, of Washington County, Oreg. 7. Bottom view of Olson land-plaster distributer, showing the holes in the box through which the plaster passes and the attachment of the tongue and its braces to the box. 8. Cross section of the box of the land-plaster distributer shown in figure 6. 9. Inside view of the box of the land-plaster distributer illustrated in figure 6, showing the feed holes, the square rod that revolves in the bottom of the box, and the position of the lever when used in slipping the upper sheet of galvanized iron to open or close the feed holes. 10. A double-fan end-gate seeder attached to the hind wheels of a 	Page, 9 10 10
wagon	13
Chrular No. 24.—Alfylfa in Cultivated Rows for Seed Production in Semiarid Regions. Fig. 1. Heavily seeded isolated alfalfa plant grown near Washington, D. C., where the climatic conditions are much more unfavorable to the production of alfalfa seed than in the semiarid sections. 2. Alfalfa in cultivated rows for seed, near Stockton, Kans	7 10 19
CIRCULAR No. 25.—THE COST OF CLEARING LOGGED-OFF LAND FOR FARMING IN THE PACIFIC NORTHWEST. FIG. 1. Logged-off land cleared of stumps in winter and sowed to oats in spring. 2. Stump pasture land. 3. Pulling a stump with a donkey engine.	3
4. Elevation showing method of setting donkey engine and gin pole in clearing land 5. Diagram showing position of donkey engine and rigging for clearing a 10-acre tract	7
 6. Stumps piled around gin pole in clearing with donkey engine 7. Diagram showing method of preparing a stump for burning 8. Diagram showing method of charcoaling or pitting stumps 9. Box for keeping powder warm 	9 10 11 14
CHRCULAR No. 27.—Lime-Sulphur Mixtures for the Summer Spraying of	
Orchards. Fig. 1. Unsprayed Montmorency cherry tree defoliated by the cherry leaf-spot 2. Montmorency cherry tree sprayed with self-beiled lime-sulphur mixture for the control of leaf-spot, showing full foliage	14
CIRCULAR No. 28.—CLOVER-SEED PRODUCTION IN THE WILLAMETTE VALLEY, OREGON. FIG. 1. Field showing the effect of land plaster on clover	9
CHCULAR No. 30.—IMPROVEMENT OF THE OAT CROP. Fig. 1. Diagram showing the planting plan of seed plat for the improvement of oats by individual plant selection.	

XVI CIRCULARS OF THE BUREAU OF PLANT INDUSTRY.

CIRCULAR No. 34.—The Work of the San Antonio Experiment Farm in 1908.	Page.
Fig. 1. Sketch showing the location of fields, crops, etc., on the San Antonio Experiment Farm	9
CIRCULAR NO. 37.—COMPARATIVE TESTS OF SUGAR-BEET VARIETIES.	
• Fig. 1. Diagram showing the standing of sugar-beet varieties tested, at each station and at all stations	7
2. Diagram showing the standing of sugar-beet varieties tested, for	0
each year and for all years	8
Circular No. 40.—A Simple Method of Detecting Sulphured Barley and Oats.	
Fig. 1. Chemicals and apparatus used for detecting sulphured grain 2. Eight bottles filled with solutions, showing the results of tests of	ð
sulphured commercial barley	7
3. Seven bottles filled with solutions, showing the results of tests of samples containing different percentages of sulphured barley and of samples of natural, or unsulphured, barley from the agricultural experiment stations of Nebraska, Wisconsin, and	
Lancag	0

0

